CLAIMS

What is claimed is:

Claim 1. A method of manufacturing a rotor assembly for an electric machine, comprising:

forming a core having a plurality of spaced slots extending through an outer surface area of said core;

extruding a plurality of aluminum bars with an exterior configuration similar to the configuration of said plurality of spaced slots, said plurality of aluminum bars having a length greater than the length of said plurality of spaced slots;

axially inserting said plurality of aluminum bars into said plurality of spaced slots;

extruding a member having an exterior configuration similar to said core;

cutting end ring portions from the extruded member;

securing a pair of end ring portions cut from the extruded member to said core by inserting a portion of said plurality of aluminum bars extending outwardly from said core into openings in the pair of end ring portions; and

securing the pair of end ring portions to said plurality of aluminum bars.

Claim 2. The method as in claim 1, wherein said member is an elongated aluminum cylindrical member.

Claim 3. The method as in claim 1, wherein said elongated aluminum cylindrical member has an inner dimension greater than an inner dimension of said core.

Claim 4. The method as in claim 1, wherein said member has an inner dimension greater than an inner dimension of said core.

Claim 5. The method as in claim 1, wherein the pair of end ring portions are secured to said plurality of aluminum bars by one of the following methods: welding; metal inert gas welding; tungsten inert gas welding; cold forming; press forming; press forming and welding; and electromagnetic compaction.

Claim 6. A method of manufacturing a rotor assembly for an electric machine, comprising:

forming a core having a plurality of spaced openings extending through an outer surface area of said core;

extruding a plurality of members with an exterior configuration similar to the configuration of said plurality of spaced openings, said plurality of member having a length greater than the length of said plurality of spaced openings in said core;

extruding an elongated member with a plurality of spaced openings extending through an outer surface area of said elongated member, the configuration of said plurality of spaced openings matches the configuration of the plurality of spaced openings of said core;

cutting end ring portions from the extruded elongated member;

axially inserting said plurality of members into said plurality of spaced openings of said core and a pair of end ring portions cut from the extruded elongated member one of said pair of end ring portions being disposed on either end of said core; and

securing said pair of end ring portions to said plurality of members.

Claim 7. The method as in claim 6, wherein said elongated member and said plurality of members are formed from either aluminum or copper.

Claim 8. The method as in claim 7, wherein said elongated member is an elongated cylindrical member.

Claim 9. The method as in claim 8, wherein said elongated cylindrical member has an inner dimension greater than an inner dimension of said core.

Claim 10. The method as in claim 6, wherein the pair of end ring portions are secured to said plurality of members by one of the following methods: welding; metal inert gas welding; tungsten inert gas welding; cold forming; press forming; press forming and welding; and electromagnetic compaction.

Claim 11. The method as in claim 6, wherein said plurality of spaced openings in said outer surface of said core have a first opening dimension in said outer surface and said plurality of spaced openings of said plurality of openings in said pair of end rings have a second opening dimension in said exterior dimension, wherein said second opening dimension is larger than said first opening dimension.

Claim 12. The method as in claim 11, wherein said first opening dimension and said second opening dimension allow a portion of said plurality of members to comprise a portion of said outer surface area of said core and a portion of an outer surface of said pair of end rings.

Claim 13. A method of manufacturing a rotor assembly for an electric machine, comprising:

forming a core having a plurality of spaced slots extending through an outer surface area of said core;

extruding a plurality of aluminum bars with an exterior configuration similar to the configuration of said plurality of spaced slots, said plurality of aluminum bars having a length greater than the length of said plurality of spaced slots;

axially inserting said plurality of aluminum bars into said plurality of spaced slots;

extruding a member having an exterior configuration similar to said core, wherein said member has an exterior dimension matching said core and a plurality of matching spaced slots extending through an outer surface of said member;

cutting end ring portions from the extruded member;

aligning said plurality of matching spaced slots of a pair of end ring portions cut from the extruded member with said plurality of spaced slots of said core;

securing said pair of end ring portions to said core by inserting a portion of said plurality of aluminum bars extending outwardly from said core into said plurality of matching spaced slots of said pair of end ring portions; and

securing the pair of end ring portions to said plurality of aluminum bars.

Claim 14. The method as in claim 13, wherein said plurality of spaced slots in said outer surface of said core have a first opening dimension in said outer surface and said plurality of matching spaced slots of said pair of end rings have a second opening dimension in said exterior dimension, wherein said second opening dimension is larger than said first opening dimension.

Claim 15. The method as in claim 14, wherein said elongated cylindrical member has an inner dimension greater than an inner dimension of said core.

Claim 16. The method as in claim 15, wherein said elongated cylindrical member has an inner dimension greater than an inner dimension of said core.

Claim 17. The method as in claim 13, wherein said extruded end ring is free from porosity.

Claim 18. The method as in claim 13, wherein said plurality of aluminum bars are secured to said pair of extruded end rings by a single pass weld.

Claim 19. The method as in claim 13, wherein said rotor assembly does not require machining after said plurality of aluminum bars are secured to said pair of extruded end rings.